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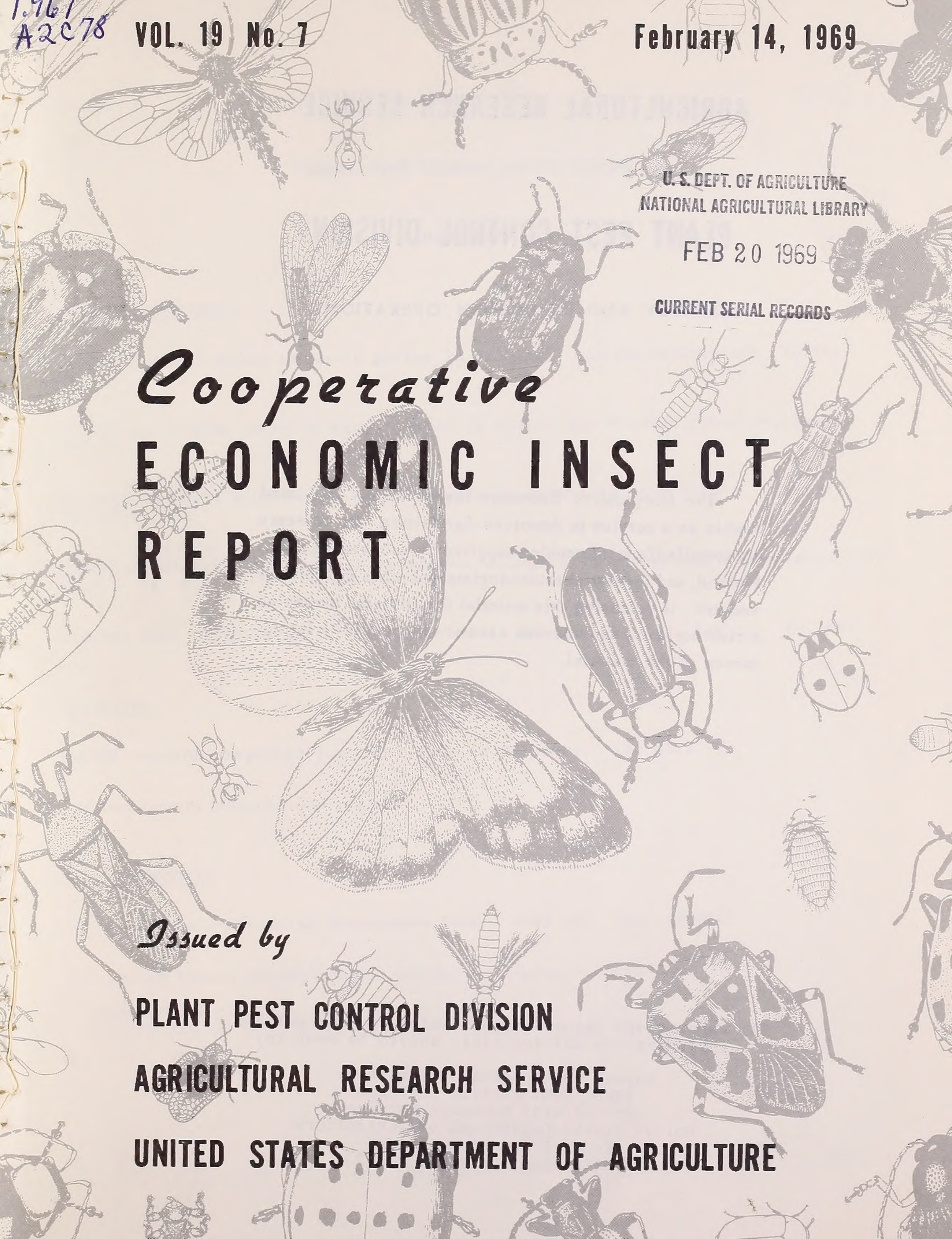

Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 19 February 14, 1969 Number 7

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GREENBUG damage heavy on small grains in Wilbarger and Foard Counties, Texas. (p. 83).

WINTER GRAIN MITE heavy on winter wheat in Archer and Wichita Counties, Texas. (p. 83).

An ARMORED SCALE general and severe on orange plants in Lake County, Florida. (p. 84).

NANTUCKET PINE TIP MOTH damage excessive throughout northeastern and east-central Texas. (p. 85).

EASTERN TENT CATERPILLAR larvae appearing in Alachua County, Florida. (p. 85).

Detection

GOLDEN NEMATODE reported for first time in Delaware. (p. 85).

For new county records see page 87.

Special Reports

Survey Methods. Selected References 1968. Part XV. (pp. 88-96).

Summary of Insect Conditions in the United States - 1968

Introduction (p. 97).
Federal and State Plant Protection Programs (pp. 97-104).

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WEATHER OF THE WEEK ENDING FEBRUARY 10

HIGHLIGHTS: Two major storms hit New England, the latter becoming the worst in years. Milder temperatures returned to the central Great Plains.

PRECIPITATION: Daily rains continued along the Washington and Oregon coast with some rain in California early in the week. Snow continued to accumulate in the Cascades and northern Sierras. Light snow fell eastward from the Cascades across the northern Great Plains to the Great Lakes. Fair skies prevailed over the Southwest early in the week, but cloudiness increased in Arizona on Wednesday with rain, snow above 6,000 feet, on Thursday. Rains fell over the lower Mississippi River Valley Wednesday and over most of the Southeast Thursday. Two major storms hit the Northeast during the week. The first dumped heavy snow in parts of New York and northern New England on Monday and Tuesday with rain over southern New England. Greenville, Maine, received 22 inches in 24 hours ending at 7 a.m. Tuesday, bringing the snow cover there to 56 inches. Winds at Mount Washington, New Hampshire, gusted to 102 m.p.h. on Tuesday. Heavy snow fell in parts of New York, 8 inches at Boonville, on Wednesday, accompanied by strong winds which caused considerable drifting snow and blowing snow with occasionally zero visibility. A storm centered in Utah dumped locally heavy snow in the central Rocky Mountains on Friday, 14 inches at Durango, Colorado. The storm moved eastward rapidly leaving mostly light but locally moderate to heavy precipitation. Snow occurred in the Ohio River Valley and thunderstorms spotted the Deep South. After leaving moderate to heavy snow over the central Appalachians on Saturday, the storm turned northeastward dumping 15-20 inches in large metropolitan centers in the Northeast on Sunday and becoming the worst storm in more than 10 years. Winds in southern New England, gusting to over 70 m.p.h. drifted the snow to depths of 6-8 feet. In the New York City area, heavy snow and blowing snow stopped both surface and air traffic and halted nearly all business and industrial activity in the major cities of the Northeast on Monday February 10. Weather of the week continued on page 87.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

GREENBUG (Schizaphis graminum) - TEXAS - Spotty in the Rolling Plains. Maximum per row foot January 21-24 by county: Wilbarger 120, Foard 150, Hardeman 300, Childress 400, Baylor 250, and Knox 250. Heavy damage in Wilbarger and Foard Counties; medium in Baylor, and some damage in small grain in Hardeman, Motley, Wichita, and Haskell Counties. Very light, up to 5 per row foot, in Karnes, Lavaca, and Brazos Counties on small grains. (Boring, Green). NEW MEXICO - Averaged per linear foot: 10-30 at Carlsbad and 100+ in barley at Artesia, Eddy County, 30-100+ in barley at Roswell, Chaves County, 2-20 in wheat at Clovis, Curry County. (Mathews). OKLAHOMA - As high as 40 per linear foot in areas of Jackson and Tillman Counties. Continues light (0-3 per linear foot) in Payne and Noble Counties. (Okla. Coop. Sur.). ARKANSAS - Survey negative in northwest. (Boyer).

SMALL GRAINS

WINTER GRAIN MITE (Penthaleus major) - TEXAS - Heavy, up to 1,000 per row foot, damaging wheat in Archer and Wichita Counties; light to medium in Young and Baylor Counties. (Green, Boring, Jan. 31).

FORAGE LEGUMES

PEA APHID (Acyrthosiphon pisum) - NEW MEXICO - Very light in alfalfa at Roswell, Chaves County. (Mathews). None to very light in alfalfa in Mesilla Valley, Dona Ana County. (Nielsen). ARKANSAS - Low in northwest area, 3-5 per square foot in vetch. (Boyer). ARIZONA - Averaged 2,000 per 100 sweeps on alfalfa in Salt River Valley, Maricopa County. (Ariz. Coop. Sur.).

ALFALFA WEEVIL (Hypera postica) - MISSISSIPPI - Averaged 1 larva per 20 sweeps in Oktibbeha, Pontotoc, and Marshall Counties. (Pitre). MISSOURI - January egg survey averages per square foot (and percent viability) by county: Ralls .7 (70.6), Cape Girardeau 3.8 (86.4), New Madrid 6.5 (77.5), Osage and Maries .6 (30.0), Howell 3.3 (43.1). Average egg punctures increased; average viability down from 95 percent in December to 64.9 percent in January. (Huggans).

EGYPTIAN ALFALFA WEEVIL (Hypera brunneipennis) - ARIZONA - Up to 90 larvae per 100 sweeps on alfalfa at Yuma, Yuma County; averaged 10 adults and 20 larvae per 100 sweeps in Salt River Valley, Maricopa County. (Ariz. Coop. Sur.).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - ARIZONA - Averaged 20 per 100 sweeps on alfalfa in Salt River Valley, Maricopa County; up to 30 per 100 sweeps at Yuma, Yuma County. (Ariz. Coop. Sur.).

CITRUS

Citrus Insect Situation in Florida - End of January - CITRUS RUST MITE (Phyllocoptruta oleivora) infested 62 (norm 64) percent of groves; 40 (norm 45) percent economic. In moderate range and near normal for January. Infestations on leaves and on fruit similar. Little change expected. Highest districts south, west, and north. TEXAS CITRUS MITE (Eutetranychus banksi) infested 28 (norm 32) percent of groves; 14 (norm 12) percent economic. In low range and near normal with little change expected. Very few infestations will be important. Highest districts west and central. CITRUS RED MITE (Panonychus citri) infested 31 (norm 36) percent of groves; 7 (norm 12) percent economic. Presently at low level and slightly below normal for January. Although some increase expected, less than 5 percent of groves will have heavy infestations. Highest districts east and central. GLOVER SCALE (Lepidosaphes gloverii) infested 62 (norm 78) percent of groves; 5 (norm 15) percent economic. PURPLE SCALE (L. beckii) infested 53 (norm 77) percent of groves; less than 1 percent (norm 7 percent) economic.

BLACK SCALE (*Saissetia oleae*) infested 29 (norm 37) percent of groves; 7 (norm 17) percent economic. YELLOW SCALE (*Aonidiella citrina*) infested 59 (norm 60) percent of groves; 2 (norm 11) percent economic. CHAFF SCALE (*Parlatoria oleae*) infested 44 (norm 59) percent of groves; 1 (norm 9) percent economic. Above 5 scales all below normal levels for January and all in low to moderate range in all districts. Few, if any infestations heavy at this time and little change expected. An ARMORED SCALE (*Unaspis citri*) present in 16 percent of groves and important in 5 percent. Increase expected. WHITEFLIES, MEALYBUGS, APHIDS, and SIX-SPOTTED MITE (*Eotetranychus sexmaculatus*) near or below very low levels normal for January. Very little change will occur in February but increase expected in March. (W.A. Simanton (Citrus Expt. Sta., Lake Alfred)).

AN ARMORED SCALE (*Unaspis citri*) - FLORIDA - General and severe on 79,000 of 790,000 nursery orange plants at Grand Island, Lake County. (Bentley, Jan. 30).

YELLOW SCALE (*Aonidiella citrina*) - CALIFORNIA - Medium in trees in Willows, Glenn County. (Cal. Coop. Rpt.).

ORNAMENTALS

HEMISPHERICAL SCALE (*Saissetia coffeae*) - FLORIDA - All stages general and severe on a percentage of 1,000 orchids in greenhouses at Zellwood, Orange County. (Musgrove, Jan. 30).

ARMORED SCALES - FLORIDA - *Fiorinia theae* (tea scale) adults on holly at Kissimmee, Osceola County. (Crews). This is a new Department of Plant Industry county record. (Fla. Coop. Sur.). *Lepidosaphes maskelli* adults on 452 of 2,260 nursery plants of juniper at Dover, Hillsborough County. (Vaughan, Jan. 24). CALIFORNIA - *Aspidiotus nerii* (oleander scale) medium on palm tree nursery stock in Menlo Park, San Mateo County. (Cal. Coop. Rpt.).

CITRUS MEALYBUG (*Planococcus citri*) - FLORIDA - Nymphs general and severe on 100 of 1,000 plants of African violet in greenhouses at Zellwood, Orange County. (Musgrove, Jan. 30).

FOREST AND SHADE TREES

SOUTHERN PINE BEETLE (*Dendroctonus frontalis*) - TEXAS - Control helped by brood tree utilizations, chemical control, and lower temperatures. Controlled 426 infestations containing 70,542 trees. Controlled 2,993 spots containing 236,035 trees for 1968. Total of 48 percent of all spots aerially detected required controls; 79 trees treated per spot. (Ollieu, Mason; For. Pest Activity Rpt., Oct.-Dec. 1968).

BLACK TURPENTINE BEETLE (*Dendroctonus terebrans*) - TEXAS - Damage in Houston, Liberty, Newton, Orange, San Augustine, San Jacinto, Shelby, Trinity, and Taylor Counties. Logging and lightning helped in control with salvage and chemicals. (Ollieu, Mason; For. Pest Activity Rpt., Oct.-Dec. 1968).

DEODAR WEEVIL (*Pissodes nemorensis*) - TEXAS - Fall buildup for second straight year. Moderate mortality of young loblolly pines on roadsides in Angelina County. Feeding symptoms on trees up to 50 feet tall. Negligible in other eastern counties. (Ollieu, Mason; For. Pest Activity Rpt., Oct.-Dec. 1968).

RED-HEADED PINE SAWFLY (*Neodiprion lecontei*) - TEXAS - Damaged 125-acre site of sapling loblolly and slash pines north of Houston. Loblolly pines lost all foliage; slash pines showed occasional attack. (Ollieu, Mason; For. Pest Activity Rpt., Oct.-Dec. 1968).

NANTUCKET PINE TIP MOTH (Rhyacionia frustrana) - TEXAS - Excessive damage to shortleaf and loblolly pine terminals throughout northeast and east-central areas. Damage to loblolly pine in plantation north of Houston. (Ollieu, Mason; For. Pest Activity Rpt., Oct.-Dec. 1968).

AN ARMORED SCALE (Fiorinia externa) - MARYLAND - On hemlock at Severna Park, Anne Arundel County. Collected by C.W. McComb December 18, 1968. Determined by J.A. Davidson. This is a new county record. (U. Md., Ent. Dept.).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - FLORIDA - First instars observed first time this year; larvae feeding on blossoms of wild plum at Gainesville, Alachua County. Collected and determined by L.A. Hetrick. (Fla. Coop. Sur.).

MAN AND ANIMALS

SCREW-WORM (Cochliomyia hominivorax) - Total of 2 cases reported in U.S. February 2-8 as follows: TEXAS - Webb, Zapata. Total of 66 cases reported in portion of Barrier Zone in Republic of Mexico January 27-31 as follows: Sonora 32, Chihuahua 1, Coahuila 1, Nuevo Leon 2, Tamaulipas 30. Total of 4 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 10,068,000; Mexico 44,600,000. (Anim. Health Div.).

COMMON CATTLE GRUB (Hypoderma lineatum) - ARKANSAS - Averages in Fulton County: Untreated - 5 grubs per head in herd of 6, 3 per head in herd of 10; treated - 8 in 6 head in herd of 30, 8 in 3 in herd of 26. Sharp County: Treated 1 grub each in 2 head in herd of 20, 3 in 2 head in herd of 6; untreated - up to 10 per animal in 5 head in herd of 6 (average 6.5). (Roberts). OKLAHOMA - Averaged 2 per head in Payne County herd; light in Mayes County. (Okla. Coop. Sur.).

SHORT-NOSED CATTLE LOUSE (Haematopinus eurysternus) - OKLAHOMA - Heavy on cattle in Woodward County, controls needed; light in Tulsa and Noble Counties. (Okla. Coop. Sur.).

HOUSEHOLDS AND STRUCTURES

A POWDER-POST BEETLE (Lyctus sp.) - CALIFORNIA - Light in ash mantel in Riverside, Riverside County; medium in basement structures in San Anselmo, Marin County; heavy in oak furniture in Sunnyvale, Santa Clara County; heavy in oak lumber in Sacramento, Sacramento County. (Cal. Coop. Rpt.).

STORED PRODUCTS

A DERMESTID BEETLE (Trogoderma parabile) - CALIFORNIA - Larvae medium in sorghum seed and heavy in lettuce seed at El Centro, Imperial County. (Cal. Coop. Rpt.).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

GOLDEN NEMATODE (Heterodera rostochiensis) - DELAWARE - Eight larvae and 6 cysts in 3 samples from potato farm at Middleton, New Castle County. Collected by B.C. Emens October 31, 1968. Determined by A.M. Golden. This is a new State record. (PPC).

GRASSHOPPERS - OKLAHOMA - Egg surveys averaged 1 viable egg pod per square foot of sod in Cimarron, Texas, Beaver, Ellis, and Harper Counties. Parasite and predator damage light. (Okla. Coop. Sur.).

PINK BOLLWORM (Pectinophora gossypiella) - NEW MEXICO - Ten live larvae in trash above ground and 9 live larvae in soil in 40-square-foot plot in southern Dona Ana County last week of January. (Adams).

SOYBEAN CYST NEMATODE (Heterodera glycines) - KENTUCKY - Light in soybeans in Union County. Collected by J. Alvis January 23. Determined by A.M. Golden. This is a new county record. (PPC).

HAWAII INSECT REPORT

General Vegetables - GREEN PEACH APHID (Myzus persicae) and CABBAGE APHID (Brevicoryne brassicae) medium in mustard cabbage at Pearl City, Waianae, and Palolo Valley, Oahu. M. persicae light to medium (2-7 per square inch) on eggplant foliage at Koko Head, Pearl City, and Waianae on Oahu and at Kahului, Maui. (Miyahira, Sato). BEAN FLY (Melanagromyza phaseoli) larvae light in wild bean plants (Phaseolus lathyroides) in vacant lot near airport at Honolulu, Oahu. (Olson, Funasaki).

Fruits and Nuts - COCONUT SCALE (Aspidiotus destructor) light to medium on few coconut trees at Kahaluu and Waiahole, Oahu. Negative in adjacent banana fields. (Kumabe, Funasaki).

Ornamentals - BLACK SCALE (Saissetia oleae) light and widespread on aalii (Dodonaea viscosa) in Haleakala National Park, Maui, at 7,000 feet. (Miyahira, Harris).

Beneficial Insects - LANTANA DEFOLIATOR CATEPILLAR (Hypena strigata) larvae medium and defoliation 10-25 percent on lantana in pastures at Ulupalakua and Waihee, Maui. (Miyahira). Numerous adults of a MINUTE EGG PARASITE (Trichogramma semifumatum) emerged from eggs of a NOCTUID MOTH (Phlegetonia delatrix). Eggs collected from foliage of Java plum in January at Palolo Valley, Honolulu, Oahu. (Wong).

Man and Animals - MOSQUITOES - Collected 1,137 Aedes vexans nocturnus and 18,935 Culex pipiens quinquefasciatus in 52 light traps on Oahu during January. Aedes catches highest at Kahuku (232). Culex high at Nanakuli (4,213) and Waianae (3,750). (Mosq. Cont. Br., Dept. of Health).

Miscellaneous Pests - GIANT AFRICAN SNAIL (Achatina fulica) collected during January after heavy showers in North Kona, Hawaii Island; of 164 snails, 74 dead or dying from poison baits. Dead snails picked up in January on Kauai: 45 from Poipu and 87 from Wahiawa. Surveillance and poison bait applications continuing. (Yoshioka, Sugawa). Light numbers of nymphs and adults of a GRASSHOPPER (Oedaleus abruptus) concentrated in 2 separate "pockets" of grassy area at Hickam Air Force Base, Honolulu, Oahu. Sprays to continue. (Olson).

INSECT DETECTION

New State Record

GOLDEN NEMATODE (*Heterodera rostochiensis*) - DELAWARE - Larvae and cysts in potato farm at Middleton, New Castle County. Collected by B.C. Emens October 31, 1968. Determined by A.M. Golden. (p. 85).

New County Records

TEA SCALE (*Fiorinia theae*) - FLORIDA - Osceola County. (p. 84).

AN ARMORED SCALE (*Fiorinia externa*) - MARYLAND - Anne Arundel County. (p. 85).

SOYBEAN CYST NEMATODE (*Heterodera glycines*) - KENTUCKY - Union County. (p. 86).

CORRECTIONS

CEIR 19(6):72 - INSECT DETECTION - A WHITEFLY (Paraleyrodes perseae) - HAWAII - On plumeria in lower Monoa area of Honolulu, Oahu. Should read ... Manoa...

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville - 2/1-6, BL - Black cutworm (*Agrotis ipsilon*) 2, granulate cutworm (*Feltia subterranea*) 9. TEXAS - Brownsville - 2/1-7, 2BL, 52-86°F., trace precip. - Armyworm (*Pseudaletia unipuncta*) 16, black cutworm 79, cabbage looper (*Trichoplusia ni*) 8, corn earworm (*Heliothis zea*) 11, granulate cutworm 6, saltmarsh caterpillar (*Estigmene acrea*) 8, variegated cutworm (*Peridroma saucia*) 11, yellow-striped armyworm (*Prodenia ornithogalli*) 9.

Weather continued from page 82.

TEMPERATURE: A warming trend occurred over most of the western and central portions of the Nation. A large area from the central Rockies to the lower Ohio River Valley averaged 4°-9° above normal. North Dakota continued colder than normal although most parts of the State averaged 15° warmer than a week ago. Temperatures in Georgia and Florida averaged near normal to slightly below normal after two weeks of mild weather. New England averaged cooler than normal following three weeks with above normal temperatures. (Summary supplied by Environmental Data Service, ESSA.)

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Additional copies of Parts I through XV of this bibliography are available from Survey and Detection Operations.

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SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1968

INTRODUCTION

The summary of insect conditions, beginning in this issue, will be continued in several succeeding issues of the Cooperative Economic Insect Report. This was compiled in Survey and Detection Operations from annual summaries that were submitted by various State and Federal cooperators. A list of the individuals who assisted in assembling data, as well as a summary of the weather for 1968, will appear after the last section of this summary is published. Survey and Detection Operations appreciates the assistance of all individuals who have participated in the preparation of material for the 1968 Summary.

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

BOLL WEEVIL (Anthonomus grandis) hibernation survey was conducted in El Paso County, TEXAS, during the week of March 18 on 89 square yards of surface trash. Results were negative. A total of 600 square yards of trash was collected and examined within the High Plains control zone. One live weevil was recovered. Boll weevil traps were installed in four fields south of El Paso and one field on the Texas-New Mexico State line. One weevil was collected in the latter field. Boll weevil traps were placed in the High Plains area, coordinating with field survey to determine the area to be treated. Trap catches increased greatly during the last week of August. Control was begun on September 3 and continued through November 4, 1968; 437,269 acres were treated. One boll weevil was found in Andrews County, Texas. This county joins the southeastern corner of New Mexico.

BOLL WEEVIL COMPLEX (Anthonomus grandis complex) detection surveys were conducted in ARIZONA and NEW MEXICO. The new boll weevil sex lure trap was used. No weevils were found in New Mexico; however, heavy infestations were found in the Avra Valley area of Arizona. A heavy concentration of thurberia weevil (A. grandis thurberiae) was found in the Molino Basin. No weevils of the complex were reported from CALIFORNIA during 1968.

The BROWN-TAIL MOTH (Nygmia phaeorrhoea) population built up in the Cape Cod area of MASSACHUSETTS. Infestations were found in York and Cumberland Counties, MAINE; and in Hillsboro, Merrimack, Belknap, and Carroll Counties, NEW HAMPSHIRE. A total of 220 webs was destroyed on 11 properties in New Hampshire.

Surveys for CALIFORNIA RED SCALE (Aonidiella aurantii) in citrus groves and residences with host material in ARIZONA yielded 21 home infestations in central Phoenix during January. A 35-acre grove at Mesa was reinfested in June, despite repeated attempts during the past 10 years to eradicate this infestation. A reinfestation was found in a Phoenix organic nursery in late July, and 46 infestations were found in an older established neighborhood during September at Tucson, Pima County.

CARIBBEAN FRUIT FLY (Anastrepha suspensa) was reported for the first time in St. Johns and Hernando Counties, FLORIDA, during 1968. Infested counties now total 30. The total number of flies trapped since 1966 indicates a buildup. This fruit fly remained a serious pest of dooryard fruits, including certain types of citrus, and damaged a 20-acre grapefruit grove in the Fort Pierce area.

CEREAL LEAF BEETLE (Oulema melanopus) was found for the first time in KENTUCKY on May 22, 1968, when specimens from Boone County were collected. Additional counties found infested included Oldham, Scott, Fayette, Gallatin, Pendleton, Bracken, Robertson, Mason, Fleming, Lewis, Greenup, Boyd, and Lawrence. The beetle was found in WEST VIRGINIA for a new State record on May 8, 1968, in Wood County. On May 22 an infestation was found in Hancock County. The beetle spread to 13 additional counties in PENNSYLVANIA, namely Erie, Crawford, Warren, Venango, Forest, Clarion, Armstrong, Indiana, Westmoreland, Allegheny, Washington, Greene, and Fayette. Cuyahoga was the only new county reported in OHIO. No new counties were reported in MICHIGAN. Six new counties were reported infested in INDIANA: Monroe, Brown, Jackson, Ohio, Jefferson, and Switzerland. In ILLINOIS, six counties were reported infested for the first time: Shelby, Moultrie, Champaign, Livingston, Grundy, and Cook. Control treatments were conducted on 507,360 acres in the State.

A survey for CHERRY FRUIT FLIES (*Rhagoletis* spp.) was conducted in the major sour cherry commercial orchard area of WISCONSIN during June, July, and August. A total of 240 sticky traps using ammonium carbonate bait were hung in cherry trees at 59 locations. No European cherry fruit flies (*R. cerasi*) were found; however, cherry fruit fly (*R. cingulata*), black cherry fruit fly (*R. fausta*), and apple maggot (*R. pomonella*) were caught.

CITRUS BLACKFLY (*Aleurocanthus woglumi*) is not known to occur in the United States. Surveys were conducted in the lower Rio Grande Valley of TEXAS, however, to detect infestations if they occurred. As an aid in keeping this species from gaining a foothold in this country, a chemical control zone is maintained from the Rio Grande southward for 100 miles into Mexico. Within this area, when infestations were found, infested trees and the margins around them were sprayed with carbophenathion. Spraying of 111,606 trees accomplished the desired goal of holding this pest in check.

The CITRUS WHITEFLY (*Dialeurodes citri*) eradication program in CALIFORNIA was terminated in spring of 1968 due to large, widely separated infestations.

Survey for CUBAN MAY BEETLE (*Phyllophaga bruneri*) in Dade and southern Broward Counties, FLORIDA, was completed June 26. No northward movement was noted. The northernmost boundary remained within the city of Miami. The southernmost infestation was extended 10 miles southwest to the Subtropical Experiment Station at Homestead. Survey was conducted as far south as Florida City with negative results.

EUROPEAN CHAFER (*Amphimallon majalis*) was reported for the first time in Orange, Chautauqua, Steuben, and Ulster Counties, NEW YORK. The first flight of chafers was noted on June 17 in Cleveland, OHIO, June 15 in Sayre, PENNSYLVANIA, and June 19 in Bayonne, NEW JERSEY. Granular chlordane and granular dieldrin were used in treating turf and other areas in MASSACHUSETTS, New York, Pennsylvania, and Ohio. Adults were recovered in Bratenahl, a suburb of Cleveland, Ohio; Winthrop, Suffolk County, Massachusetts; and Newark, Essex County, and North Bergen, Hudson County, New Jersey. Extensions of infestations were noted in Broome, Erie, Genesee, Jefferson, Livingston, Niagara, Oneida, and Queens Counties and Manhattan proper in New York.

The GOLDEN NEMATODE (*Heterodera rostochiensis*) infestation in Steuben County, NEW YORK, was delimited. Eight fields, comprising 350 acres, were found infested. Two of these fields, with a total of 84 acres, produced seed stock. Survey of areas with a history of receiving seed stock from Steuben County failed to reveal any infestation. A total of 22,102 samples was collected from 15,518 acres of tablestock potato land. On Long Island, 21,798 samples were collected from 9,323 acres. Three fields contained viable cysts. Growers and shippers on Long Island are encouraged to wash all potatoes from exposed fields prior to shipment. A total of 1,312 acres was treated for control of the golden nematode in New York.

Light numbers of a GRASS BUG (*Labops hirtus*) fed on 10,000 acres of wheatgrass on the Hualapai Indian Reservation, Mohave County, ARIZONA, in late May. During early June counts averaged 35 per square yard on wheatgrass at Reservation Flats in the Sitgreaves National Forest, Apache County. *Labops hesperius*, *L. utahensis*, *Irbisia pacifica*, *I. brachycera*, and *I. shulli* were the most conspicuous range grass pests in UTAH for 1968. Although planted grasses were damaged on several thousand acres, damage was less extensive than during 1966 or 1967. Most damage occurred in the southern range areas damaged during the preceding 2 years. To control these pests, 5,184 acres of Forest Service rangeland in the east fork of the Sevier River in Garfield and Kane Counties were aerially sprayed. The low volume organic phosphate used, gave about 100 percent control. *Labops hesperius* ranged up to 5 per square foot and damaged wheatgrass in Caribou County, IDAHO. These pests damaged native grass in Elmore County in late May and 200 acres of rangeland wheatgrass in Clark County in late June. A black species, *Irbisia pacifica*, infested a field of wheatgrass in Idaho County during early June.

GRASSHOPPERS averaged 2.7 per square yard in fields and 3.1 in margins in ILLINOIS the last week of August. This was a slight increase over 1967. Second instars of *Dissosteira carolina* were noted by May 3 in WISCONSIN, first instars of *Melanoplus sanguinipes* by June 21; few *M. femurrubrum* second instars and *M. differentialis* third instars by July 12. *M. sanguinipes* and *D. carolina* adults occurred by August 9, *M. femurrubrum* adults August 16. Adults were still present on October 27. Numbers were low all season and feeding on crops was scarce. Economic numbers of grasshoppers were general in the same areas of MINNESOTA as in 1967, but populations were lower. This decline was due to wet weather in June and early July during and after hatch. Economic numbers infested an estimated 210,945 acres of alfalfa, red clover, and grass compared with 288,235 acres in 1967. Crop damage was not apparent during summer. Late in the season, grasshoppers damaged marginal rows of corn and soybeans in some areas. Egg surveys in fields with economic populations during the adult survey, showed egg pods in 84 percent of the fields. *M. femurrubrum* was again dominant throughout MINNESOTA. *Chorthippus curtipennis* has increased during the last few years primarily in the western area. This grasshopper has caused little crop damage but may cause problems in grassy areas. Other grasshoppers were important in only a few fields. Economic infestations will again occur in the west-central, central, and east-central districts in 1969. Infestations will be dispersed throughout this area on alfalfa and along roadsides and ditchbanks. Light and noneconomic infestations should be widely scattered, isolated problems. Weather conditions during egg hatch and early nymphal growth could modify this outlook.

Grasshopper infestations have been declining in NORTH DAKOTA since the severe outbreak in 1961 and were at the lowest level since that year. Hatch began in mid-May and continued through July. The main hatch occurred during the week of June 24. Damage was evident by mid-June. *M. femurrubrum* and *M. differentialis* eggs did not hatch until mid-June. Infestations were generally noneconomic over most of the State. The fall adult survey showed light infestations in Grant, Morton, and Emmons Counties and parts of Cass, Richland, and Ransom Counties. Threatening to severe infestations occurred in a few scattered fields, mainly in alfalfa, soil bank, and sweetclover. Grasshoppers were generally noneconomic on rangeland. *M. femurrubrum*, *M. bivittatus*, and *M. sanguinipes* were dominant. Grasshoppers are not expected to be a widespread problem in North Dakota during 1969. Surveys in SOUTH DAKOTA in late 1967 indicated a potentially severe grasshopper outbreak in 1968 if weather conditions were ideal. Prior to early May an egg development survey in eastern Fall River County along the Cheyenne River indicated that predators had destroyed up to 25 percent of the grasshopper eggs in some locations and that parasitism had accounted for up to 20 percent of the eggs. *M. bivittatus* and *M. differentialis* eggs hatched in cropland areas and *Ageneotettix deorum* on rangeland in western Custer County the third week of May. By mid-June, when first cutting of alfalfa was underway, *M. femurrubrum* began to emerge. In the southeastern area *M. bivittatus* was mostly in second to third instars and *M. differentialis* in first to second instars. As expected, a threatening to severe buildup in Sanborn and Davison Counties ranged 25-30 grasshoppers per square yard in field margins and roadsides, and up to 50 per square yard in weedy areas. Similar buildups occurred along margins of winter wheat in eastern Pennington County. By the first week of July, up to 30 grasshoppers per square yard infested some alfalfa in west-central Sanborn County with 40-50 per square yard along margins of heavily infested areas. West of the Missouri River in Fall River, eastern Pennington, Shannon, Bennett, and Washabaugh Counties, counts per square yard ranged 4-15 in fields and 15-20 in margins of alfalfa. Through the end of July, rangeland infestations remained light. Apparent damage to cropland was confined to alfalfa fields and margins of wheat and corn. In some areas of South Dakota sufficient moisture through the middle of August kept crops ahead of damage. Chemical control on roadsides and fields was limited. A potential for an economic infestation exists over most of eastern and parts of western South Dakota during 1969, particularly along the Cheyenne River.

Grasshoppers declined in NEBRASKA in 1968. Economic numbers infested only a few scattered areas in the southeast and northeast districts. No economic infestations were reported on western range and crop lands. The heaviest concentrations in the north occurred from Valentine to Lewis, and Clark Lake. Dominant species in the eastern area were Melanoplus femurrubrum, M. differentialis, and M. bivittatus. On western area croplands, M. bivittatus, M. differentialis, and M. sanguinipes were dominant. Aulocara elliotti, Ageneotettix deorum, and Trachyrhachys kiowa were important on rangeland in Nebraska. Grasshoppers caused concern and damage to margins of many wheatfields in south-central and southwestern KANSAS in the fall of 1968. Borders of many fields in this area were treated. M. femurrubrum, M. sanguinipes, and M. bivittatus caused some damage in many areas of the State, but less than in 1967. Treatments were applied to a large acreage, particularly in the south-central and southwest districts. The 1968 fall survey showed populations of 3-7 per square yard in most areas. In general, grasshopper numbers were below those of 1967 in Kansas. Grasshopper egg hatch in south-central OKLAHOMA began in early April. Fall surveys showed 687,000 acres of rangeland in 20 southwest, west-central, and northwest counties economically infested. Dominant rangeland species were Ageneotettix deorum, Phlibostroma quadrimaculatum, Aulocara elliotti, Drepanopterna femoratum, Metator pardalinus, Cordillacris crenulata, and Melanoplus lakinus. Dominant crop margin species were Aeoloplus turnbulli, M. packardii, and M. bivittatus. Hippiscus spp. caused damage to grasses and rangeland in TEXAS.

In NEW MEXICO 292,931 acres of rangeland were treated for grasshoppers in De Baca, Guadalupe, and Quay Counties. Light to moderate numbers of Trimerotropis spp. in ARIZONA were scattered throughout Cochise, Graham, and Maricopa Counties in early May. Grasshoppers appeared in areas of CALIFORNIA that have been relatively free since 1961 when the fungus Entomophthora grylli practically eliminated these pests. Infestations appeared in Kings, Riverside, and Kern Counties in April and by the end of May were general and heavy. Largest infestations appeared in the Sierra foothills and northern counties. Heavy infestations, primarily on rangelands and pastures, continued through July and decreased sharply in August. Some fruits, vegetables, and alfalfa were damaged. Grasshoppers were also locally damaging to grain plantings. Most treatment was done by individual growers. Treatments were applied to outbreaks totaling 70,000 acres in Humboldt, Lassen, Siskiyou, Kern, Riverside, and San Diego Counties. Grasshoppers caused some damage to potatoes in Siskiyou County, California. Although grasshoppers were more numerous in NEVADA than in 1967, no control programs were required and only small, localized acreages were treated. The 1968 fall adult survey indicated a potential infestation on 131,335 acres of rangeland in 1969, mostly in Eureka, Humboldt, Lander, and Pershing Counties.

Economic grasshopper infestations were small and scattered in OREGON during 1968. An estimated 24,000 acres in the northeastern area were infested with 8 or more grasshoppers per square yard; 12,000 of these acres are Federal lands. Melanoplus sp. nymphs damaged peppermint fields in Lane County where treatments were necessary. Some damage was also reported from Josephine County. First and second stage nymphs of Oedaleonotus enigma and M. sanguinipes were observed in western IDAHO in late April. First to third instars of O. enigma averaged 5 per square yard on rangeland south of Glenns Ferry and scattered concentrations occurred on range north of Shoshone Falls in early May. Adults of O. enigma and Aulocara elliotti were first noted the second week of June in Elmore County. Nymphs and adults ranged 5-20 per square yard on an estimated 8,300 acres of rangeland. More grasshoppers survived to adult stage in 1968 than in 1967 in MONTANA. Range conditions were again excellent and damage was noticeable only in a very few areas. Some 21,000 acres of privately operated range were treated where heavy populations threatened needed forage. Again, some grain margins were sprayed as these pests moved into new fall seedings. In WYOMING there was one small control project on rangeland grasshoppers in 1968. On July 31, 7,768 acres were sprayed near Douglas, Converse County. More than 90 percent of the grasshoppers were killed. The 1968 adult survey indicates that 1,164,300 acres of rangeland were economically infested. Grasshopper populations and damage in UTAH were below normal on corn, sorghum, and small grain. Although populations were generally lower than normal on rangeland, moderate to spotty damage occurred in many counties. An aerial spray program controlled outbreaks on planted grasses on over 6,000 acres of private range in the Cedar Mountain area of Iron County. Damage on forage was lighter than normal although spotty in various localities. Populations were high in some areas and threatened damage for 1969 in Utah County, particularly west of Utah Lake. A total of 124,150 acres was surveyed in 10 Utah counties in 1968.

Defoliation by GYPSY MOTH (*Porthetria dispar*) occurred on several hundred acres west of Hawk Mountain in Berks County, PENNSYLVANIA. Many larvae began "spinning up" on June 24. Defoliation occurred in the Morristown National Historical Park area, NEW JERSEY, during the third week of June, and in several areas of NEW HAMPSHIRE and MAINE. Aerial control was completed on June 4 in New Jersey, when 48,288 acres were treated. In NEW YORK, 17,253 acres were treated, and in Pennsylvania, 56,291 acres received treatment. New county records were established in Lancaster, Lebanon, Lehigh, and Montgomery Counties, Pennsylvania, when gypsy moth adults were trapped. Moths were recovered also in the following areas: Pennsylvania - Berks, Bucks, Carbon, Chester, Luzerne, Monroe, Northampton, Pike, Schuylkill, and Wayne Counties; New Jersey - Atlantic, Burlington, Camden, Cape May, Gloucester, Hunterdon, Mercer, Middlesex, Salem, Somerset, and Warren Counties; New York - Delaware County. Over 44,000 traps were utilized. For the second consecutive year, no moths have been trapped in MICHIGAN.

IMPORTED FIRE ANT (*Solenopsis saevissima richteri*) was detected for the first time in Lauderdale County, ALABAMA, and minor extensions were found in 18 counties. Only Colbert, Jackson, and De Kalb Counties remain uninfested in that State. No infestations were found in ARKANSAS outside the known infested counties in 1968. No new counties were found infested in FLORIDA, but extensions were found in 10 counties. The ant was found in Bacon, Jasper, Johnson, Long, McIntosh, and Montgomery Counties, GEORGIA, for the first time, and extensions of existing infestations were found in 6 counties. Claiborne Parish, LOUISIANA, remained free of imported fire ant in 1968; however, extensions were found in 7 parishes. Holmes County, MISSISSIPPI, was found infested for the first time, and extensions were noted in 17 counties. No new counties were found infested in NORTH CAROLINA, but extensions were found in 3 counties. In SOUTH CAROLINA, imported fire ant was found for the first time in Kershaw and Sumter Counties, and extensions reported from 2 counties. No imported fire ant has been found in TENNESSEE since 1966. New counties found infested in TEXAS included Cherokee, Shelby, and Trinity. Minor extensions occurred in 3 counties. Of the 14.2 million acres treated in 1968, 278 thousand were in Alabama, 20 thousand in Arkansas, 3.99 million in Florida, 7.2 million in Georgia, 6.4 thousand in Louisiana, 1.89 million in Mississippi, 75 thousand in North Carolina, 27 thousand in South Carolina, and 43 thousand in Texas.

Over 41,000 traps were operated to detect JAPANESE BEETLE (*Popillia japonica*) during 1968. Established infestations were found for the first time in De Kalb and Lee Counties, ALABAMA. Over 1,100 traps were operated during the year. Beetles were found in the treated area around Irondale, Jefferson County. Trapping in INDIANA resulted in finding this scarab in Hendricks, Lawrence, and Tipton Counties for the first time, and in Hancock County for the first time since 1958. Livingston County, ILLINOIS, was a new county, as were Christian, Grant, Leslie, and Menifee Counties, KENTUCKY. Other new county records included Putnam, OHIO, Anderson, and Lancaster, SOUTH CAROLINA. First adults of the season were reported from VIRGINIA on June 3, Illinois June 17, MICHIGAN June 25, and Ohio July 1. Heavy catches of beetles occurred in the 1966 treated area of East St. Louis, Illinois. Washington and Sullivan Counties, TENNESSEE, evidently are becoming reinfested. In that State beetles were collected in Anderson, Blount, Greene, Knox, Loudon, Monroe, Unicoi, and Washington Counties. Over 6,000 beetles were trapped in the Hamby Valley area of Monroe County, Tennessee. Survey was conducted in most States outside the generally infested area.

P. japonica was heavy in NEW JERSEY, DELAWARE, and southern NEW ENGLAND. Dover Air Force Base, Delaware, remained hazardous throughout the season, with 1,006 aircraft treated. In NORTH CAROLINA survey was confined to areas of regulatory importance; heavy infestations occurred. Populations were heavy in all States in 1968. In Monroe and Lenawee Counties, Michigan, 16 single finds were made around the perimeter of the current regulated area; Warren had 2,000 acres generally infested; Kalamazoo had one single find; Berrien County has approximately 4,600 acres generally infested. All surveys in cities of Lansing, Grand Rapids, and Kalamazoo were negative.

Survey conducted for KHAPRA BEETLE (*Trogoderma granarium*) in 18 States and the Republic of Mexico was negative during 1968. No infestations are known to occur in North America.

No specimens of MEDITERRANEAN FRUIT FLY (*Ceratitis capitata*) were caught in the United States or Mexico during 1968; 23,600 traps were operated for detection of this pest.

A detection survey for MEXICAN BEAN BEETLE (*Epilachna varivestis*) in IDAHO revealed one adult and one egg mass in adjacent bean fields at Rupert, Minidoka County, in mid-July.

MEXICAN FRUIT FLY (*Anastrepha ludens*) trapping was conducted in the States of Florida, Louisiana, Texas, Arizona and California, and in the Republic of Mexico. Flies were trapped in Hidalgo and Webb Counties, TEXAS; none were found in the other States. On January 22, 1968, a nongravid female was trapped near Harlingen. It was not until October 10 that another fly, a female, was trapped near McAllen. This was the earliest since the 1949-1950 fruit season. A single fly was trapped in each of Webb and Hidalgo Counties in November. Two larvae were found in fruit in Hidalgo County. Native flies were trapped in Baja California where sterile flies are released for control purposes. Such sterile flies are marked prior to release.

An insignificant MORMON CRICKET (*Anabrus simplex*) infestation was reported from La Grande, OREGON. Scattered crickets were found in Elko County, NEVADA; however, no indication of banding was found. Approximately 700 acres were found with light populations in Pershing and Eureka Counties, Nevada. Scattered crickets were seen in Rich County, UTAH, and Meagher County, MONTANA. No control was necessary in 1968.

Sex lure traps were operated for the detection of PINK BOLLWORM (*Pectinophora gossypiella*) in Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, Tennessee, Texas, South Carolina, Arizona, New Mexico, and California. Pink bollworm was lighter during 1968 in all States except California. In ARKANSAS, 2 moths were trapped in Miller County and 2 larvae found in Cleburne County. In LOUISIANA, one larva was found in De Soto Parish and one larva in Red River Parish. Moths were trapped in Avoyelles, Caddo, Grant, Natchitoches, Rapides, and Red River Parishes. There was a late buildup in NEW MEXICO, but it was lighter than last year. Lint cleaner inspections and trap catches in ARIZONA were light, though there were large numbers of larvae in bolls and debris in Arizona cotton fields in January and February 1968. Moths were trapped in Nye and Clark Counties, NEVADA, and larvae were found in Nye County. No pink bollworm was found in the Bakersfield area of Kern County, CALIFORNIA, in 1968. As a means of control, over 9 million sterile moths were released in this area. In Imperial and Riverside Counties, moth catches indicated an increase while the rest of the country showed a decrease over 1967.

The RANGE CATERPILLAR (*Hemileuca oliviae*) egg mass survey in NEW MEXICO during January 1968 indicated that the 1967 spray program in Colfax, Union, and Harding Counties had greatly reduced populations. Development during 1968 was very late in Lincoln, Colfax, and Union Counties. Economic infestations were reported from Lincoln and Colfax Counties late in August.

The loss due to SOYBEAN CYST NEMATODE (Heterodera glycines) leveled off considerably from the spectacular increases of previous years in MISSOURI. However, there was a five-percent loss from this cyst nematode in the bootheel area. This nematode was found to be numerous on roots of soybeans in the Columbia bottoms at the northeast edge of St. Louis. Damage was noted in several fields. Females were present on the roots of soybeans throughout one field, causing damage of 10 percent. The resistant soybean variety, Pickett, performed very well in the heavily infested fields in southeastern Missouri. The earlier maturing soybean varieties, Custer and Dyer, were affected where rainfall was scarce. The dry weather appeared to reduce yields. Approximately 200,000 acres of the estimated 1.5 million acres in soybeans in southeast Missouri were planted to resistant varieties. Survey was conducted in 17 States on more than 690,000 acres. Local spread was reported from several counties in the infested States. The following counties or parishes were found infested with soybean cyst nematode for the first time during 1968: Conway, ARKANSAS; Tensas, LOUISIANA; Claiborne, Jefferson, Panola, Quitman, and Washington, MISSISSIPPI; St. Charles, Missouri; Beaufort, Onslow, and Washington, NORTH CAROLINA; Hardin and Henderson, TENNESSEE.

The SWEETPOTATO WEEVIL (Cylas formicarius elegantulus) State quarantine was removed in NORTH CAROLINA during September. Weevils had been found in three counties in late 1967 and close inspection failed to reveal sweetpotato weevils present. The pest was found again in a Tabor City storage on December 30, 1968, however, and the quarantine once again became effective. Survey was conducted throughout the sweetpotato growing areas of ALABAMA, GEORGIA, LOUISIANA, MISSISSIPPI, North Carolina, and SOUTH CAROLINA. Infestations were recorded from all States. In South Carolina, sweetpotato weevil was found on wild hosts on Sullivan's Island; however, no weevils were found in sweetpotatoes. Sweetpotato weevil was found for the first time in Barbour County, Alabama; Franklin and Red River Parishes, Louisiana, and weevils were found in St. Tammany Parish for the first record in 25 years.

WEST INDIAN SUGARCANE ROOT BORER (Diaprepes abbreviatus) was detected in the Apopka and Plymouth area of Orange County, FLORIDA, in September and October 1968. In 1964 one adult was collected at Apopka. Over 6,000 acres are now considered infested, including 800 acres of citrus. Severe damage to young commercial citrus occurred when adults fed on leaves and larvae girdled roots. Larvae seriously damaged citrus nursery stock in a nursery at Apopka. Regulatory and control procedures were instigated by the State.

WESTERN GRAPE LEAF SKELETONIZER (Harrisina brillians) infestations were treated in Sacramento, Yolo, Placer, El Dorado, Fresno, and Kings Counties, CALIFORNIA. A late season infestation was found at Clovis, Fresno County, and immediate treatment was effective.

Surveys for WHITE-FRINGED BEETLES (Graphognathus spp.) revealed infestations in Newton County, TEXAS, and in Dunklin, Pemiscot, and New Madrid Counties, MISSOURI, for new State records. One new county, Pulaski, was found infested in ARKANSAS. Local spread occurred in that State, as well as in OKLAHOMA, FLORIDA, and GEORGIA. In LOUISIANA, local spread occurred in most parishes, and these beetles were found for the first time in Calcasieu, Evangeline, Rapides, and Terrebonne Parishes. New counties found infested in 1968 in MISSISSIPPI included Clay and Lowndes, while spread was noted in most other infested counties. White-fringed beetles were found in Dorchester and Greenwood Counties, SOUTH CAROLINA, and in Obion and Rhea Counties, TENNESSEE, for new county records. In VIRGINIA, adults of G. leucoloma striatus were found in James City, Mecklenburg, and York Counties and in the independent city of Williamsburg; G. leucoloma fecundus was reported from Chesterfield County. In addition to these new county records, local spread was evident in the Norfolk area. Larval digging in Hampton revealed 25 larvae per square foot in a soybean field. No spread was noted in MARYLAND, and only 2 larvae were reported in the eradication area of Prince Georges County.

Eradication of WHITE GARDEN SNAIL (Theba pisana) continued in CALIFORNIA with regular applications of poison bran baitings at Manhattan Beach, Los Angeles County. The infestation involved 7 city blocks. A few live snails were found on one property in July 1968.

The detection survey for WOOLLY WHITEFLY (Aleurothrixus floccosus) in CALIFORNIA continued most of the year. A combination treatment program for Dialeurodes citri (citrus whitefly) and woolly whitefly was conducted until the citrus whitefly program was terminated. Biocontrol of woolly whitefly is underway with parasite releases. Delimiting survey revealed 374 city blocks infested with woolly whitefly in San Diego, San Diego County, the only known location in California.

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) flights in OREGON peaked during late May and early June. Chemical sprays were made in April. First instars were found in mid-June. No new, established infestations were found. Fall surveys detected 373 infested trees, most of which were in the Hermiston and McNary Dam areas of Umatilla County. Infested trees are mostly Scotch and mugho pines.

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